

CLAIMS:

1. A facepiece for a breathing apparatus by which breathable gas is supplied to a wearer, the facepiece comprising a supply valve for delivering gas to the 5 interior of the facepiece, and an exhaust opening closeable by an exhaust valve for allowing the egress of 10 gas from the facepiece, wherein the exhaust valve comprises a movable diaphragm which, in a first position, closes the exhaust opening in the facepiece, the diaphragm being movable to a second position displaced toward the interior of the facepiece relative to the first position and still in sealing engagement with the exhaust opening, and a third position displaced outwardly of the facepiece relative to the first position and in 15 which the exhaust opening is open to allow the egress of gas, the diaphragm being biased towards the second position by biasing means, and the diaphragm engaging operating means to open the supply valve when in the second position.

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2. A facepiece according to claim 1, wherein a sealing element cooperates with the diaphragm and the periphery of the exhaust opening to seal the diaphragm to the exhaust opening while the diaphragm is in its first 25 position and while it moves between the first and second positions.

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SUB
B

3. A facepiece according to claim 2, wherein the sealing element is mounted on the facepiece to surround the exhaust opening.

SUB B (cnt) 5
4. A facepiece according to claim 2, wherein the sealing element is mounted on the diaphragm.

5. A facepiece according to claim 1, wherein the diaphragm is pivotally mounted to the facepiece.

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6. A facepiece according to claim 1, wherein the diaphragm is mounted for rectilinear movement relative to the facepiece.

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stop AY
7. A facepiece according to any preceding claim, wherein adjustment means are provided to adjust the distance between the first and second positions of the diaphragm.

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stop AY
8. A facepiece according to any preceding claim, wherein the operating means which opens the supply valve is an operating lever.

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SUB B (cnt)
9. A facepiece according to claim 8, wherein adjustment means is provided between the operating lever and the diaphragm to adjust the point on the travel of the diaphragm at which contact with the operating lever is

made.

Sub B (cont.) 5

10. A facepiece according to claim 9, wherein the adjustment means comprises a fixed abutment on the diaphragm and a movable abutment mounted on the lever.

11. A facepiece according to claim 9, wherein the adjustment means comprises a fixed abutment on the lever and a movable abutment mounted on the diaphragm.

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Sub A 5

12. A facepiece according to any preceding claim, further including means operable to move the diaphragm to its third position.

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Sub A 5

13. A facepiece according to any preceding claim, including releasable means operable to retain the diaphragm in its third position.

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14. A facepiece according to claim 13, wherein the releasable means comprises a movable latch element engageable with a detent.

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Sub B (cont.)

15. A facepiece according to claim 14, wherein the latch element is mounted on the facepiece and the detent is mounted on the diaphragm.

Sub A 5

16. A facepiece according to any preceding claim,

wherein the diaphragm is a speech transmission diaphragm.

17. A facepiece according to any preceding claim,
wherein the interior of the facepiece is divided into
5 upper and lower compartments, the upper compartment
covering the wearer's eyes and having a transparent sight
window, and the lower compartment covering the wearer's
mouth and nasal openings and having the diaphragm mounted
thereon, the supply valve being situated to deliver
breathable gas to the upper compartment, and non-return
valves being provided to allow gas to flow from the upper
10 to the lower compartment only.

18. A facepiece according to any of claims 1 to 16,
wherein the facepiece covers the wearer's nose and mouth
15 only.

19. A breathing apparatus to supply breathable gas to
a wearer, comprising a reservoir of breathable gas at
20 superambient pressure and a facepiece sealable to the
wearer to cover the nose and mouth, the facepiece
comprising a supply valve for delivering to the interior
of the facepiece, and an exhaust opening closeable by an
exhaust valve for allowing the egress of gas from the
25 facepiece, wherein the exhaust valve comprises a movable
diaphragm which, in a first position, closes the exhaust
opening in the facepiece, the diaphragm being movable to

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Sub B (cont.)

a second position displaced toward the interior of the facepiece relative to the first position and still in sealing engagement with the sealing element, and a third position displaced outwardly of the facepiece relative to the first position and in which the exhaust opening is open to allow egress of gas, the diaphragm being biased towards the second position by biasing means, and the diaphragm engaging operating means to open the supply valve when in the second position.

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20. A breathing apparatus according to claim 19, wherein a sealing element cooperates with the diaphragm and the periphery of the exhaust opening to seal the diaphragm to the exhaust opening while the diaphragm is in its first position and while it moves between the first and second positions.

21. A breathing apparatus according to claim 20, wherein the sealing element is mounted on the facepiece to surround the exhaust opening.

22. A breathing apparatus according to claim 21, wherein the sealing element is mounted on the diaphragm.

25 23. A breathing apparatus according to claim 19, wherein the diaphragm is pivotally mounted to the facepiece.

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B (not)*

6 24. A breathing apparatus according to claim 19, wherein the diaphragm is mounted for rectilinear movement relative to the facepiece.

Sub A1

5 25. A breathing apparatus according to any of claims 19 to 24, wherein adjustment means are provided to adjust the distance between the first and second positions of the diaphragm.

Sub A1

10 26. A breathing apparatus according to any of claims 19 to 25, wherein the operating means which opens the supply valve is an operating lever.

Sub A1

15 27. A breathing apparatus according to claim 26, wherein adjustment means is provided between the operating lever and the diaphragm to adjust the point on the travel of the diaphragm at which contact with the operating lever is made.

Sub B3

20 28. A breathing apparatus according to claim 27, wherein the adjustment means comprises a fixed abutment on the diaphragm and a movable abutment mounted on the lever.

Sub A1

25 29. A breathing apparatus according to claim 28, wherein the adjustment means comprises a fixed abutment on the lever and a movable abutment mounted on the diaphragm.

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Sub B (cn1)

30. A breathing apparatus according to any of claims 19 to 29, wherein the facepiece further includes means operable to move the diaphragm to its third position.

5 31. A breathing apparatus according to claim 30, wherein the facepiece further includes releasable means operable to retain the diaphragm in its third position.

3A 32. A breathing apparatus according to claim ~~31~~³³, wherein 10 the releasable means comprises a movable latch element engageable with a detent.

33. A breathing apparatus according to claim 32, wherein the latch element is mounted on the facepiece and the 15 detent is mounted on the diaphragm.

Sub B
Sub B

34. A breathing apparatus according to claim 33, wherein the diaphragm is a speech transmission diaphragm.

20 35. A breathing apparatus according to claim 34, wherein the interior of the facepiece is divided into upper and lower compartments, the upper compartment covering the wearer's eyes and having a transparent sight window, and the lower compartment covering the wearer's mouth and 25 nasal openings and having the diaphragm mounted thereon, the supply valve being situated to deliver breathable gas to the upper compartment, and non-return valves being

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provided to allow gas to flow from the upper to the lower compartment only.

Sub B4 (mt)

38 36. A breathing apparatus according to claim ~~25~~, wherein
5 the facepiece covers the wearer's nose and mouth only.

37. A breathing apparatus according to any of claims 19 to 34, wherein the facepiece forms part of a hood or helmet containing the head of the wearer.

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Sub A9

38. A breathing apparatus according to any of claims 19 to 34, wherein the facepiece forms part of a garment partially or totally enclosing the wearer.

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39. A hood for a breathing apparatus, incorporating a facepiece according to any of claims 1 to 17.

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40. A garment including a facepiece according to any of claims 1 to 18.

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Sub C1

41. A demand valve for a facepiece of a breathing apparatus, comprising an inlet duct and an outlet opening, and a valve member movable between open and closed positions to respectively close and open a valve orifice which when open provides fluid communication between the inlet duct and the outlet opening, the demand valve further including a movable cover to close the

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outlet opening to prevent the ingress of contaminants, the cover being moved away from the outlet opening by fluid pressure when the valve member is in the open position.

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42. A demand valve according to claim 41 wherein the movable cover is a resilient flap extending across the outlet opening.

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